

IDENTIFICATION INFORMATION

Originator: Maryland Department of Natural Resources (DNR)

Publication Date: 1997

Title: **Maryland Watershed Economic and Environment Database**

Publication Information

Publication Place: Annapolis, Maryland

Publisher: Maryland Department of Natural Resources, Chesapeake and Coastal Watershed Service (CCWS)

Description

Abstract: This statewide watershed-oriented database contains economic and environmental information in digital form from several sources, comprising essentially five source files: (1) the revised 1997 Maryland Department of Natural Resources (DNR) eight digit watershed file; (2) Office of Planning (OP) 1990 and 1994 statewide land use files; (3) U.S. Department of Commerce's (USCOM) 1990 Census: Maryland and Counties with revisions and updating by OP and DNR of the data; (4) the Federal Reserve Bank of Richmond 's (FRBR) An Economic Profile of Maryland: 1995; and (5) U.S. Department of Commerce's (USCOMA) 1992 Census of Agriculture: Maryland. The database is limited to the 1997 revised DNR designated second level or sub-watershed level which encompasses 138 watersheds. The Chesapeake Bay, rather than being one hydrological unit, has been subdivided into three hydrologic units for purposes related to Departmental responsibilities. A fourth hydrologic unit is the Atlantic Ocean. Variables within the database have been obtained by essentially intersecting statewide data on a county basis or by Census block group to the 1997 DNR eight level digit designated watershed polygons and then allocating variables to watersheds based upon acres of watershed within the County. In the case of agricultural variables, variables were allocated on amount of agricultural land within a watershed. Several variables in the database, derived from digital files and hard copy reports previously distributed in other watershed oriented databases, have also been added to the database.

Purpose: This database will be used to analyze the importance of industry within the context of the DNR's developing Integrated Natural Resources Management Assessment (INRA) and for other departmental purposes. It will be used to analyze industry and other information related to natural resources in the state and relationship to the Assessment. It will also be used in conjunction with other databases to measure cumulative impacts of growth and development upon the state's natural resources, particularly in reference to habitat loss and in terms of economic development. It will be used with other databases to undertake qualitative and quantitative ecological risk assessment and ranking of watershed similarities and differences.

Time Period of Content

1989-2020

Status

Ongoing

Maintenance and update frequent and irregular

Spatial Domain

Bounding Coordinates

West Bounding Coordinate: -79.4938
East Bounding Coordinate: -75.0405
North Bounding Coordinate: 39.7425
South Bounding Coordinate: 37.8713

Keywords

Theme

Theme Keyword Thesaurus: None
Theme Keyword: Watershed
Theme Keyword: Economic
Theme Keyword: Environment

Place

Place Keyword Thesaurus: None
Place Keyword: Maryland
Place Keyword: Watershed

Access Constraints: None

Use Constraints: This watershed-oriented database represents the results of data collection and processing for specific Maryland Department of Natural Resources (DNR) planning activities and indicates generalized existing conditions for a certain time period as referenced in the metadata database form. As such, it is only valid for this intended use and time. The user is responsible for the results of any application of the data for other than their intended purpose. The information contained in this database is from publicly available sources, but no representation is made as to the accuracy or completeness of the data. Acknowledgement of the Maryland DNR/CCWS is requested for products derived from the data.

Cross reference data

Citation:

Originator: Maryland Department of Natural Resources (DNR)

Publication Date: 19970327

The SUB1997 file is a dissolved version of SHED1997. This file was created by removing and dissolving by the MDE8DIGT code to form unique polygons at the eight digit level.

Title: SUBS1997 Alias file names for this file:

- swSUBS7f.e00 - ARC Export waterSUBS file in state plane 27 feet
- swSUBS3f.e00 - ARC Export waterSUBS file in state plane 83 feet
- swSUBS3m.e00 - ARC Export waterSUBS file in state plane 83 meters
- swSUBS3m.dig - Digital Line Graph waterSUBS file in state plane 83 meters

All references to SUBS1997 apply to all the aliases except for the above reference to projection. These files can not be renamed except during importing.

DATA QUALITY INFORMATION

Attribute Accuracy:

Attribute Accuracy Report: Attributes from the various data layers were compared with the original thematic data to verify that no attributes were generated that should not exist. Numbers and acreages derived of different variables were compared with source hardcopy and other

reports. Rounding errors for variables were compared with original source data to determine a degree of error. When watershed totals for the state were compared with state totals from the 1990 Census, 1992 Census of Agriculture, County Business Report, Economic Profile Report, OP Land Use and related source data, rounding errors occurred. In a number of variables rounding errors were found but not considered substantial to affect database use.

Logical Consistency Report: Topology was maintained by using either the ARC/INFO build or clean process. The clean process was used for data layers where ARC determined there were intersections. In order to maintain consistency, the same watershed file was used for intersecting or subdividing all thematic layers.

Completeness Report: All thematic data layers were summarized for watershed and statewide areas and the acreages compared with Federal Reserve's Economic Profile Report, U.S. Department of Commerce, U.S. Department of Agriculture, Office of Planning and other Departmental hard copy reports. Land use classifications were summarized by County, by State and by watershed and compared with original source hard copy reports. 1990 Census data, 1992 Agricultural Census data, Business and Industry data and Economic Profile data were summarized by watershed, by County and by State and compared with original source hard copy reports.

Positional Accuracy: varied by thematic layer.
watershed file was stated as being accurate to 1:24,000

Lineage

Source Citation

Originator: Maryland Department of Natural Resources (DNR)
Chesapeake and Coastal Watershed Service
Publication Date: 1997
Title: Maryland Eight Digit Watershed File

Publication Information

Publication Place: Maryland Department of Natural Resources
Chesapeake and Coastal Watershed Service
580 Taylor Avenue, E-2
Annapolis, MD 21401

Publisher: Maryland Department of Natural Resources
Chesapeake and Coastal Watershed Service

Source Time period of Content: publication date

Source Citation

Originator: Maryland Office of Planning (OP)
Publication Date: 1992 and 1994
Title: OP 1990 and 1994 land use reports and refined and updated 1990 Census reports
Publication Information

Publication Place: Maryland Office of Planning
301 Preston Street
Baltimore, MD 21201

Publisher: Maryland Office of Planning
Source Time period of Content: publication date

Source Citation

Originator: U.S. Department of Commerce, Economics and Statistics Administration
(USCOM)

Publication Date: 1992

Title: 1990 Census: Maryland, State and County Data

Publication Information

Publication Place: U.S. Department of Commerce
Government Printing Office
Washington, D. C. 20233

Publisher: U.S. Department of Commerce
Source Time period of Content: publication date

Source Citation

Originator: U.S. Department of Commerce, Economics and Statistics Administration
(USCOM)

Publication Date: 1994

Title: 1992 Census of Agriculture

Publication Information

Publication Place: U.S. Department of Commerce
Government Printing Office
Washington, D. C. 20233

Publisher: U.S. Department of Commerce
Source Time period of Content: publication Date

Source Citation

Originator: Federal Reserve Bank of Richmond, Virginia (FRBR)

Publication Date: 1995

Title: An Economic Profile of Maryland: 1995

Publication Information

Publication Place: Public Affairs, Federal Reserve Bank of Richmond
Post Office Box 27622
Richmond, VA 23261-7622

Process Step: This database was created using several digital data files to develop a statewide watershed oriented database using PC ARC/INFO. The fields within the database were derived from different thematic data layers containing different scales and methodologies. The fields

contain values generated by intersecting the MD DNR watershed files with 1990 Census data, 1992 Census of Agriculture data, OP land use classification data, industry data and economic profile layer and summarizing selected variables by watershed. Several variables in this database were obtained from previously existing and distributed watershed oriented digital files and hard copy reports.

SPATIAL DATA ORGANIZATION INFORMATION

Indirect spatial reference: Maryland Department of the Environment watershed code

ENTITY AND ATTRIBUTE INFORMATION:

Attribute Label: MDE8DIGT

Attribute Definition: DNR/MDE watershed eight digit designation

Attribute Definition Source: MD Department of Natural Resources (DNR)

Attribute Domain Values: See Appendix A

Attribute Label: MDE8NAME

Attribute Definition: MD watershed eight digit name (common)

Attribute Definition Source: MD Department of Environment (MDE)

Attribute Domain Values: See Appendix A

Attribute Label: INRAACRE

Attribute Definition: INRA total watershed acreages

Attribute Definition Source: MD DNR, See Appendix A

Attribute Domain Values: 0 - 535495

Attribute Units of Measure: U.S. acres

Attribute Label: CTYNAME

Attribute Definition: County name abbreviation

Attribute Definition Source: DNR

Attribute Label: CTYFIPS

Attribute Definition: County Federal Information Processing System

Attribute Definition Source: U.S. Department of Commerce (USCOM)

Attribute Label: OPLUUR94

Attribute Definition: MD Office of Planning (OP) Land Use Classification: Urban

Attribute Definition Source: OP, see Appendix B

Attribute Domain Values: 0 - 59829

Attribute Units of Measure: U.S. acres

Attribute Label: OPLUAG94

Attribute Definition: MD OP Land Use Classification: Agriculture

Attribute Definition Source: OP, see Appendix B

Attribute Domain Values: 0 - 115420
Attribute Units of Measure: U.S. acres

Attribute Label: OPLUFO94
Attribute Definition: MD OP Land Use Classification: Forest
Attribute Definition Source: OP, see Appendix B
Attribute Domain Values: 0 - 117222
Attribute Units of Measure: U.S. acres

Attribute Label: OPLUWA94
Attribute Definition: MD OP Land Use Classification: Water
Attribute Definition Source: OP, see Appendix B
Attribute Domain Values: 0 - 520660
Attribute Units of Measure: U.S. acres

Attribute Label: OPLUWE94
Attribute Definition: MD OP Land Use Classification: Wetlands
Attribute Definition Source: OP, see Appendix B
Attribute Domain Values: 0 - 41544
Attribute Units of Measure: U.S. acres

Attribute Label: OPLUBA94
Attribute Definition: MD OP Land Use Classification: Barren
Attribute Definition Source: OP, see Appendix B
Attribute Domain Values: 0 - 1115
Attribute Units of Measure: U.S. acres

Attribute Label: OPLUTO94
Attribute Definition: MD OP Land Use Classification: Total acres
Attribute Definition Source: OP, See Appendix B
Attribute Domain Values: 0 - 535494
Attribute Units of Measure: U.S. acres

Attribute Label: DNRLAND
Attribute Definition: Total acres in DNR ownership
Attribute Definition Source: DNR, see Appendix C
Attribute Domain Values: 0 - 41291
Attribute Units of Measure: U.S. acres

Attribute Label: OPLUUR90
Attribute Definition: MD OP Land Use Classification: Urban
Attribute Definition Source: OP, see Appendix B
Attribute Domain Values: 0 - 55975
Attribute Units of Measure: U.S. acres

Attribute Label: OPLUAG90

Attribute Definition: MD OP Land Use Classification: Agriculture

Attribute Definition Source: OP, see Appendix B

Attribute Domain Values: 0 - 117942

Attribute Units of Measure: U.S. acres

Attribute Label: OPLUFO90

Attribute Definition: MD OP Land Use Classification: Forest

Attribute Definition Source: OP, see Appendix B

Attribute Domain Values: 0 - 117988

Attribute Units of Measure: U.S. acres

Attribute Label: OPLUWA90

Attribute Definition: MD OP Land Use Classification: Water

Attribute Definition Source: OP, see Appendix B

Attribute Domain Values: 0 - 520670

Attribute Units of Measure: U.S. acres

Attribute Label: OPLUWE90

Attribute Definition: MD OP Land Use Classification: Wetlands

Attribute Definition Source: OP, see Appendix B

Attribute Domain Values: 0 - 41653

Attribute Units of Measure: U.S. acres

Attribute Label: OPLUBA90

Attribute Definition: MD OP Land Use Classification: Barren

Attribute Definition Source: OP, see Appendix B

Attribute Domain Values: 0 - 1560

Attribute Units of Measure: U.S. acres

Attribute Label: OPLUTO90

Attribute Definition: MD OP Land Use Classification: Total

Attribute Definition Source: OP, see Appendix B

Attribute Domain Values: 0 - 535504

Attribute Units of Measure: U.S. acres

Attribute Label: TOTIMP94

Attribute Definition: MD DNR Estimated watershed impervious acres

Attribute Definition Source: DNR, see Appendix D

Attribute Domain Values: 0 - 30748

Attribute Units of Measure: U.S. acres

Attribute Label: POPUL90W

Attribute Definition: Total estimated watershed population

Attribute Definition Source: U.S. Department of Commerce (USCOM) - 1990 Census, see

Appendix E

Attribute Domain Values: 0 - 262289

Attribute Units of Measure: Count

Attribute Label: POPUL95W

Attribute Definition: Total estimated watershed population for the year 1995

Attribute Definition Source: USCOM, see Appendix E

Attribute Domain Values: 0 - 262492

Attribute Units of Measure: Count

Attribute Label: POPUL00W

Attribute Definition: Total estimated watershed population for the year 2000

Attribute Definition Source: USCOM, see Appendix E

Attribute Domain Values: 0 - 263963

Attribute Units of Measure: Count

Attribute Label: POPUL10W

Attribute Definition: Total estimated watershed population for the year 2010

Attribute Definition Source: USCOM, see Appendix E

Attribute Domain Values: 0 - 268778

Attribute Units of Measure: Count

Attribute Label: POPUL20W

Attribute Definition: Total estimated watershed population for the year 2020

Attribute Definition Source: USCOM, see Appendix E

Attribute Domain Values: 0 - 288009

Attribute Units of Measure: Count

Attribute Label: HOUHLDS

Attribute Definition: Estimated watershed number of households for the year 1990

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 187500

Attribute Units of Measure: Count

Attribute Label: HOUHDINC

Attribute Definition: Estimated average watershed household income for the year 1990

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 73958

Attribute Units of Measure: Average

Attribute Label: WKCARI

Attribute Definition: Estimated watershed number driving alone to work in 1990

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 175534

Attribute Units of Measure: Count

Attribute Label: WKCAR2

Attribute Definition: Estimated watershed number carpooling to work in 1990

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 45928

Attribute Units of Measure: Count

Attribute Label: INDTYP1

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Agriculture, forestry and fisheries

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 2222

Attribute Units of Measure: Count

Attribute Label: INDTYP2

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Mining

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 233

Attribute Units of Measure: Count

Attribute Label: INDTYP3

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Construction

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 19728

Attribute Units of Measure: Count

Attribute Label: INDTYP4

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Manufacturing, non-durable goods

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 10274

Attribute Units of Measure: Count

Attribute Label: INDTYP5

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Manufacturing, durable goods

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 15823

Attribute Units of Measure: Count

Attribute Label: INDTYP6

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Transportation

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 12721

Attribute Units of Measure: Count

Attribute Label: INDTYP7

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Communication and other public utilities

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 8694

Attribute Units of Measure: Count

Attribute Label: INDTYP8

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Wholesale Trade

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 8716

Attribute Units of Measure: Count

Units of Measure: Attribute Label: INDTYP9

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Retail Trade

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 40040

Attribute Units of Measure: Count

Attribute Label: INDTYP10

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Finance, insurance and real estate

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 21628

Attribute Units of Measure: Count

Units of Measure: Attribute Label: INDTYP11

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in 1990

- Business and repair services

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 19113

Attribute Units of Measure: Count

Attribute Label: IND_TYP12

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in 1990

- Personal Services

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 10718

Attribute Units of Measure: Count

Units of Measure: Attribute Label: IND_TYP13

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990 - Entertainment and recreation services

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 3719

Attribute Units of Measure: Count

Attribute Label: IND_TYP14

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in 1990

- Professional and related services - health

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 25308

Attribute Units of Measure: Count

Units of Measure: Attribute Label: IND_TYP15

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in 1990

- Professional and related services - education

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 27631

Attribute Units of Measure: Count

Attribute Label: IND_TYP16

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in 1990

- Professional and related services - other professional

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 34321

Attribute Units of Measure: Count

Attribute Label: IND_TYP17

Attribute Definition: Estimated watershed employed aged 16 and over by type of industry in

1990

- Public Administration

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 39148

Attribute Units of Measure: Count

Attribute Label: HOUNITS

Attribute Definition: Total estimated watershed housing units

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 196680

Attribute Units of Measure: Count

Attribute Label: PUBLWATR

Attribute Definition: Total estimated watershed houses on public/private water

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 195512

Attribute Units of Measure: Count

Attribute Label: DRLLWELL

Attribute Definition: Total estimated watershed houses on drilled well water

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 14903

Attribute Units of Measure: Count

Attribute Label: DUGWELL

Attribute Definition: Total estimated watershed houses on dug well water

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 2360

Attribute Units of Measure: Count

Attribute Label: OTHWATR

Attribute Definition: Total estimated watershed houses on other water

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 1243

Attribute Units of Measure: Count

Attribute Label: PUBSEWR

Attribute Definition: Total estimated watershed houses on public/private sewer systems

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 193341

Attribute Units of Measure: Count

Attribute Label: SEPSEWR

Attribute Definition: Total estimated watershed houses on private septic

Attribute Definition Source: USCOM, 1990 Census, see Appendix F

Attribute Domain Values: 0 - 19080
Attribute Units of Measure: Count

Attribute Label: OTHSEWR
Attribute Definition: Total estimated watershed houses on other sewer
Attribute Definition Source: USCOM, 1990 Census, see Appendix F
Attribute Domain Values: 0 - 1236
Attribute Units of Measure: Count

Attribute Label: MDYRSBLT
Attribute Definition: Median age housing structure built
Attribute Definition Source: USCOM, 1990 Census, Appendix F
Attribute Domain Values: 0 - 51
Attribute Units of Measure: Average

Attribute Label: LABOR94W
Attribute Definition: Estimated watershed civilian labor force in 1994
Attribute Definition Source: Federal Reserve Bank of Richmond, VA (FRBR), Appendix G
Attribute Domain Values: 0 - 139514
Attribute Units of Measure: Count

Attribute Label: TOEMP93W
Attribute Definition: Estimated total watershed employment in 1993
Attribute Definition Source: FRBR, Appendix G
Attribute Domain Values: 0 - 161497
Attribute Units of Measure: Count

Attribute Label: FJOB93W
Attribute Definition: Estimated total watershed farm jobs in 1993
Attribute Definition Source: FRBR, Appendix G
Attribute Domain Values: 0 - 987
Attribute Units of Measure: Count

Attribute Label: NFJOB93W
Attribute Definition: Estimated total watershed non-farm jobs in 1993
Attribute Definition Source: FRBR, Appendix G
Attribute Domain Values: 0 - 161373
Attribute Units of Measure: Count

Attribute Label: TOPINC93W
Attribute Definition: Estimated total watershed personal income in 1993
Attribute Definition Source: FRBR, Appendix G
Attribute Domain Values: 0 - 7064986
Attribute Units of Measure: U.S. dollars in thousands (000)

Attribute Label: PCAPIN93W

Attribute Definition: Estimated watershed per capita income in 1993

Attribute Definition Source: FRBR, Appendix G

Attribute Domain Values: 0 - 34537

Attribute Units of Measure: Average/U.S. dollars

Attribute Label: FINC93W

Attribute Definition: Estimated watershed total farm income in 1993

Attribute Definition Source: FRBR, Appendix G

Attribute Domain Values: 0 - 16360

Attribute Units of Measure: U.S. dollars in thousands (000)

Attribute Label: NFINC93W

Attribute Definition: Estimated watershed total non-farm income in 1993

Attribute Definition Source: FRBR, Appendix G

Attribute Domain Values: 0 - 7058

Attribute Units of Measure: U.S. dollars in thousands (000)

Attribute Label: RBLD94W

Attribute Definition: Estimated watershed residential building permits in 1994

Attribute Definition Source: FRBR, Appendix G

Attribute Domain Values: 0 - 1203

Attribute Units of Measure: Count

Attribute Label: CBLD94W

Attribute Definition: Estimated watershed commercial building permits in 1994

Attribute Definition Source: FRBR, Appendix G

Attribute Domain Values: 0 - 292

Attribute Units of Measure: Count

Attribute Label: ABLD94W

Attribute Definition: Estimated watershed addition and alteration permits in 1994

Attribute Definition Source: FRBR, Appendix G

Attribute Domain Values: 0 - 4969

Attribute Units of Measure: Count

Attribute Label: TOBANK94W

Attribute Definition: Estimated watershed total banks and other financial institutions in 1994

Attribute Definition Source: FRBR, Appendix G

Attribute Domain Values: 0 - 97

Attribute Units of Measure: Count

Attribute Label: HSCHL94W

Attribute Definition: Estimated number of high school graduates by watershed in 1994

Attribute Definition Source: FRBR, Appendix G

Attribute Domain Values: 0 - 1938
Attribute Units of Measure: Count

Attribute Label: LREV93W
Attribute Definition: Estimated watershed local government revenues in 1993
Attribute Definition Source: FRBR, Appendix G
Attribute Domain Values: 0 - 656877
Attribute Units of Measure: U.S. dollars in thousands (000)

Attribute Label: NUMFRM92
Attribute Definition: Estimated number of farms in state in 1992
Attribute Definition Source: U.S. Department of Commerce (USCOMA), 1992 Census of
Agriculture: Maryland, see Appendix H
Attribute Domain Values: 0 - 622
Attribute Units of Measure: Count

Attribute Label: FRMACR92
Attribute Definition: Estimated land in farms by total acres in 1992
Attribute Definition Source: USCOMA, see Appendix H
Attribute Domain Values: 0 - 101706
Attribute Units of Measure: U.S. acres

Attribute Label: FRMSALE92
Attribute Definition: Estimated total sales by thousand dollars in 1992 (\$, 1000)
Attribute Definition Source: USCOMA, see Appendix H
Attribute Domain Values: 0 - 66236
Attribute Units of Measure: U.S. dollars

Attribute Label: LNDVAL92
Attribute Definition: Estimated agriculture land value by acre in 1992
Attribute Definition Source: USCOMA, see Appendix H
Attribute Domain Values: 0 - 4580
Attribute Units of Measure: Average U.S. dollars/acre

Attribute Label: AGYLD97
Attribute Definition: Agriculture projected yield per acre for wheat in 1997
Attribute Definition Source: USCOMA, see Appendix H
Attribute Domain Values: 0 - 67
Attribute Units of Measure: Average U.S. bushels/acre

Attribute Label: AGYLD92
Attribute Definition: Agriculture estimated yield per acre for wheat in 1997
Attribute Definition Source: USCOMA, see Appendix H
Attribute Domain Values: 0 - 67
Attribute Units of Measure: Average U.S. bushels/acre

Distributor:

Contact Organization Primary

Maryland Department of Natural Resources
Chesapeake and Coastal Watershed Service

Contact Address

Address Type: mailing address

Address: 580 Taylor Avenue, E-2

City: Annapolis

State or province: Maryland

Postal code: 21401

Contact Voice Telephone: 410-260-8790

Distribution Liability: Although these data have been processed successfully on a computer system at the MD Department of Natural Resources (DNR), no warranty expressed or implied is made by the MD DNR regarding the utility of the data on any other system, nor shall the act of distribution constitute such warranty. The MD DNR will warrant the delivery of this product in computer-readable format, and will offer replacement when the product is determined unreadable by correctly adjusted computer input peripherals, or when the physical medium is delivered in damaged condition.

Standard Order Form:

Maryland Spatial Data Sharing Agreement

Offline Option

Offline media: 3.5" 1.44 meg. floppy disk

Recording format: dBase III+

Digital Form

Digital Transfer Information

format name: dBase III+

Format specification: dbf

Fees: cost of reproduction

METADATA REFERENCE INFORMATION

Metadata Date: 19971030

Metacontact:

Contact Organization Primary

Maryland Department of Natural Resources
Chesapeake and Coastal Watershed Service

Contact Address

Address Type: mailing address

address: 580 Taylor Avenue, E-2

city: Annapolis

State or province: Maryland

Postal code: 21401

Metadata Standard Name: Content Standards for Digital Geospatial
Metadata
Metadata Standard Version: 19940608

APPENDIX A

MDE8DIGT	MDE8NAME (Common Watershed Name)	INRAACRE*
02050301	Conewago Creek	3394
02120201	L. Susequehanna River	24420
02120202	Deer Creek	93164
02120203	Octoraro Creek	22243
02120204	Conowingo Dam Susq R	14778
02120205	Broad Creek	26123
02120101	Atlantic Ocean	59399
02130102	Assawoman Bay	12802
02130103	Isle of Wight Bay	41120
02130104	Sinepuxent Bay	13710
02130105	Newport Bay	32491
02130106	Chincoteague Bay	89297
02130201	Pocomoke Sound	46073
02130202	Lower Pocomoke River	101353
02130203	Upper Pocomoke River	95597
02130204	Dividing Creek	39699
02130205	Nassawango Creek	43875
02130206	Tangier Sound	89646
02130207	Big Annemessex River	29818
02130208	Manokin River	74311
02130301	Lower Wicomico River	79771
02130302	Monie Bay	29580
02130303	Wicomico Creek	19962
02130304	Wicomico River Head	24993
02130305	Nanticoke River	127781
02130306	Marshyhope Creek	78911
02130307	Fishing Bay	130086
02130308	Transquaking River	70932
02130401	Honga River	52737
02130402	Little Choptank	69685
02130403	Lower Choptank	195688
02130404	Upper Choptank	163699
02130405	Tuckahoe Creek	98284
02130501	Eastern Bay	52067
02130502	Miles River	34860
02130503	Wye River	56997
02130504	Kent Narrows	12646

02130505	Lower Chester River	82245
02130506	Langford Creek	27027
02130507	Corsica River	25297
02130508	Southeast Creek	35456
02130509	Middle Chester River	39951
02130510	Upper Chester River	87985
02130511	Kent Island Bay	5755
02130601	Lower Elk River	32460
02130602	Bohemia River	29711
02130603	Upper Elk River	22235
02130604	Back Creek	9514
02130605	Little Elk Creek	15730
02130606	Big Elk Creek	10946
02130607	Christina River	5319
02130608	Northeast River	44424
02130609	Furnace Bay	14100
02130610	Sassafras River	56939
02130611	Stillpond-Fairlee	40913
02130701	Bush River	45836
02130702	Lower Winters Run	8468
02130703	Atkisson Reservoir	29076
02130704	Bynum Run	14583
02130705	Aberdeen Proving Ground	21624
02130706	Swan Creek	16862
02130801	Gunpowder River	24984
02130802	Lower Gunpowder Falls	29239
02130803	Bird River	17736
02130804	Little Gunpowder Falls	37339
02130805	Loch Raven Reservoir	140932
02130806	Prettyboy Reservoir	46455
02130807	Middle River - Browns	9447
02130901	Back River	39127
02130902	Bodkin Creek	6579
02130903	Baltimore Harbor	74897
02130904	Jones Falls	37281
02130905	Gwynns Falls	41710
02130906	Patapsco River L N Br	75755
02130907	Liberty Reservoir	104801
02130908	S Branch Patapsco	54938
02131001	Magothy River	28441
02131002	Severn River	51744
02131003	South River	42294
02131004	West River	19865
02131005	West Chesapeake Bay	52919
02131101	Patuxent River lower	240440

02131102	Patuxent River middle	67905
02131103	Western Branch	59544
02131104	Patuxent River upper	56446
02131105	Little Patuxent River	66214
02131106	Middle Patuxent River	37074
02131107	Rocky Gorge Dam	34208
02131108	Brighton Dam	50595
02139996	Upper Chesapeake Bay	62153
02139997	Middle Chesapeake Bay	97901
02139998	Lower Chesapeake Bay	535495
02140101	Potomac River L tidal	248673
02140102	Potomac River M tidal	47765
02140103	St. Mary's River	54461
02140104	Breton Bay	38449
02140105	St. Clement Bay	33257
02140106	Wicomico River	61009
02140107	Gilbert Swamp	27757
02140108	Zekiah Swamp	69904
02140109	Port Tobacco River	30101
02140110	Nanjemoy Creek	49323
02140111	Mattawoman Creek	62192
02140201	Potomac River U tidal	36255
02140202	Potomac River MO Cnty	88225
02140203	Piscataway Creek	44477
02140204	Oxon Creek	6891
02140205	Anacostia River	92740
02140206	Rock Creek	39268
02140207	Cabin John Creek	16424
02140208	Seneca Creek	82738
02140301	Potomac River FR Cnty	43100
02140302	Lower Monocacy River	194686
02140303	Upper Monocacy River	156501
02140304	Double Pipe Creek	123398
02140305	Catoctin Creek	77063
02140501	Potomac River WA Cnty	58297
02140502	Antietam Creek	118771
02140503	Marsh Run	13460
02140504	Conococheague Creek	41736
02140505	Little Conococheague	10720
02140506	Licking Creek	17719
02140507	Tonoloway Creek	1338
02140508	Potomac River AL Cnty	32551
02140509	Little Tonoloway Creek	9885
02140510	Sideling Hill Creek	14138
02140511	Fifteen Mile Creek	33173

02140512	Town Creek	43411
02141001	Potomac River L N Br	73145
02141002	Evitts Creek	19955
02141003	Wills Creek	38430
02141004	Georges Creek	47695
02141005	Potomac River U N Br	67627
02141006	Savage River	74539
05020201	Youghiogheny River	154255
05020202	Little Youghiogheny R	13110
05020203	Deep Creek Lake	40937
05020204	Casselman River	58588
02130101	Atlantic Ocean	

*INRAACRE: MDE8DIGT includes acreages for five watersheds crossing the State of Maryland

boundary into the District of Columbia; these five are essentially the Middle Potomac watersheds.

INRAACRE includes only those watershed acreages located within the State of Maryland boundary. Watersheds affected in MDE8DIGT and that cross the MD state boundary line into D.C. are:

MDE8DIGT	MDE8NAME	MD ACRES	TOTAL	DIFF
02140201	Potomac River U tidal	36653	36256	307
02140202	Potomac River MO Cnty	89621	88225	1396
02140204	Oxon Creek	11736	6894	4832
02140205	Anacostia River	116519	92740	23779
02140206	Rock Creek	52761	39269	13492

APPENDIX B

Land Use Classifications and Definitions have been extracted from Final Report: Preparation of 1990 Land Use/Land Cover Maps and ARC/INFO Digital Data Base, April 15, 1991. A Report Submitted to: Maryland Office of Planning, 301 West Preston Street, Baltimore, MD 21201 and Prepared by: Daft-McCune-Walker, Inc., 200 East Pennsylvania Avenue, Towson, MD 21204.

MARYLAND LAND USE/COVER CLASSIFICATION SCHEME

10 Urban Built-Up

11 Low-density residential - Detached single-family/duplex dwelling units, yards and associated areas. Areas of more than 90 percent single-family/duplex dwelling unit, with lot sizes of less than five acres but at least one-half (.2 dwelling units/acre to 2 dwelling units/acre).

12 Medium-density residential - Detached single-family/ duplex attached single-unit row housing, yards, and associated areas. Areas of more than 90 percent single-family/duplex units and attached single-row housing, with lot sizes of less than one-half acre, but at least one-eighth acre (2 dwelling units/acre to 8 dwelling units/acre).

13 High-density residential - Attached single-unit row housing, garden apartments, high-rise apartments/condominiums, mobile home and trailer parks. Areas of more than 90 percent high-density residential units, with more than 8 dwelling units per acre.

14 Commercial - Retail and wholesale services. Areas used primarily for the sale of products and services, including associated yards and parking areas.

15 Industrial - Manufacturing and industrial parks, including associated warehouses, storage yards, research laboratories, and parking areas.

16 Institutional - Elementary and secondary schools, middle schools, junior and senior high schools, public and private colleges and universities, military installations (built-up areas only, including buildings and storage, training, and similar areas), churches, medical and health facilities, correctional facilities, and government offices and facilities that are clearly separable from the surrounding land cover.

17 Extractive - Surface mining operations, including sand and gravel pits, quarries, coal surface mines, and deep coal mines. Status of activity (active vs. abandoned) is not distinguished.

18 Open urban land - Urban areas who use does not require structures, or urban areas where nonconforming uses characterized by open land have become isolated. Included are golf courses, parks, recreation areas (except areas associated with schools or other institutions), cemeteries, and entrapped agricultural and undeveloped land within urban areas.

191 Large lot subdivision (agriculture) - Residential subdivisions with lot sizes of less than 20 acres, but at least 5 acres with a dominant land cover of open fields or pasture.

192 Large lot subdivision (forest) - Residential subdivisions with lot sizes of less than 20 acres, but at least 5 acres with a dominant land cover of deciduous, evergreen or mixed forest.

20 Agriculture

- 21 Cropland - Field crops and forage crops.
- 22 Pasture - Land used for pasture, both permanent and rotated; grass.
- 23 Orchards/vineyards/horticulture/aquaculture - Areas of intensively managed commercial fishing areas (including oyster beds).
- 241 Feeding operations - Cattle feed lots, holding lots for animals, hog feeding lots, poultry houses.
- 242 Agricultural Building breeding and training facilities, storage facilities, built-up areas associated with a farmstead, small farm ponds, commercial fishing areas.
- 25 Row and Garden Crops - Intensively managed truck and vegetable farms and associated areas.

40 Forest

- 41 Deciduous Forest - Forested areas in which the trees characteristically lose their leaves at the end of the growing season.
- 42 Evergreen Forest - Forested areas in which the trees are characterized by persistent foilage throughout the year. Included are such species as white pine, loblolly pine, pond pine, hemlock, southern white cedar, and red pine.
- 43 Mixed Forest - Forested areas in which neither deciduous nor evergreen species dominate, but in which there is a combination of both types.
- 44 Brush - Areas that do not produce timber or other wood products, but may have cut-over timber stands, abandoned agricultural fields, or pasture. These areas are characterized by vegetation types such as sumac, vines, rose, brambles and tree seedlings.

50 Water - Rivers, waterways, reservoirs, ponds, bays, estuaries, and ocean.

60 Wetlands - Forested or nonforested wetlands, including tidal flats, tidal and nontidal marshes and upland swamps and wet areas.

70 Barren Land

- 71 Beaches - Extensive shoreline areas of sand and gravel accumulation, with no vegetative cover or other land use.
- 72 Bare exposed rock - Areas of bedrock exposure, scarps, and other natural accumulations of rock without vegetative cover.
- 73 Bare ground - Areas of exposed ground caused naturally, by construction, or by other cultural processes.

APPENDIX C

Explanation of DNRLAND

The watershed estimates for DNRLAND (Department of Natural Resource lands) are those acreages for only land DNR owns and administers. Lands included in this variable are DNR State Parks, State Forests, Natural Environment Areas, Natural Resource Management Areas,

APPENDIX D

Methodology for Determining Watershed Impervious Acreage

To estimate impervious surface on a watershed basis, Maryland Office of Planning (OP) 1994 land use digital files were intersected with Department of Natural Resources's (DNR)/Maryland Department of Environment (MDE) digital watershed file (SUB1997) as refined by DNR in 1997. This provided acreage of 1994 OP land use classifications by land use within each of the states 138 second level or sub-watersheds. Major classifications used by OP in their 1994 land use inventory were urban, agriculture, forest, water, wetland and barren (See Appendix B). OP, in their land use inventory, had further subdivided land use files into more distinct categories of use for selected second-level land use classifications. The urban land use classification was subdivided into low density residential (11), medium density residential (12), high density residential (13), commercial (14), industrial (15), institutional, extractive and other urban (16, 17, 18), large lot residential and other (191, 192). It was assumed that the barren classification (71, 72, 73) of use is essentially land that has been stripped for development or includes gravel pits, etc. Therefore, the total acreage in this classification was added to impervious acreage classifications. Consequently, impervious surface became an aggregation of acreage of total urban land use classifications and the acreage in the barren classification of land use. While a case could be made for the acreage in the agriculture land use classification to be also used in calculating impervious surface within a watershed, it was felt that at this point in time it should not be included. Acreage of land use classified as forest, wetland and water was not included in the calculations because it was felt that the important determining factor should be developed land use.

Each individual classification of land use placed in the developed land use category (urban plus barren acreage) was then assigned a percentage of impervious surface to that specific land use. Percentages of impervious surface by type of developed land use were used. Percentage of estimated surface by type of use were from the U.S. Soil Conservation Service TR-55 Manual. Percentages assigned to land use classifications were 25% for low density residential, 38% for medium density residential, 65% for high density residential, 85% for industrial, 72% for commercial, institutional, extractive and for other urban acreage at 72%, large lot residential and other acreage at 12%. Barren land acreage was calculated at 98%. The general formula then used to derive impervious surface acreage is acres of land classified in that use times percent of impervious surface for the use. Acres of impervious surface total includes acres for each estimated use in a watershed.

APPENDIX E

Methodology for Watershed Estimates for Population for 1990, 1995, 2000, 2010 and 2020 from 1990 Census data and Maryland Office of Planning (OP) County Population Projections

These variables are from a statewide watershed-oriented database previously distributed in 1997 by the Department of Natural Resources (DNR), Chesapeake and Coastal Watershed Service (CCWS) titled the Maryland Watershed Population Projection Database. These variables come from several sources, comprising essentially three source files: (1) the revised 1997 DNR eight digit watershed file; (2) U.S. Department of Commerce 1990 Census data; and (3) OP revised and updated reports related to county population and housing estimates and change through the year 2020. Variables within the database were obtained by essentially allocating revised 1990 Census population and housing data and estimated OP population and housing projections to the sub-watershed level by percent of watershed land acreage within a county.

APPENDIX F

Methodology for Estimating Watershed Variable Counts from 1990 Census

Census variables for block groups were allocated to watershed by intersecting Census block groups with the 1997 DNR eight digit watershed file. This intersection was used to determine the ratio of area of block within any given watershed. These ratios were then applied to the census variables to determine the amount of that variable within the watershed. Average variables had to be multiplied out to create a value. These values were then portioned out to the watershed level, after summarizing by a watershed level averages were recalculated.

APPENDIX G

Method for Allocating County Totals to Watersheds from Federal Reserve Bank of Richmond, VA (FRBR) Report titled An Economic Profile of Maryland: 1995

Economic variables for counties were allocated to watershed by intersecting Maryland State Highway Administration (SHA) county boundary files with the 1997 DNR eight digit watershed file. This intersection was used to determine the ratio of area of county within any given watershed. These ratios were then applied to the economic variables to determine the amount of that variable within the watershed. Average variables had to be multiplied out to create a value. These values were then portioned out to the watershed level, after summarizing by a watershed level averages were recalculated.

APPENDIX H

Methodology for Portioning out 1992 Agricultural Census Variables by Watershed, Determining Agricultural Land Value and Estimated and Projected Yields for Wheat per acre for Maryland

This database is a component of the Department of Natural Resource's (DNR) developing Integrated Natural Resources Assessment (INRA). This agriculturally-oriented, industry-oriented database was developed from three digital files: (1) the 1990 rectified Office of Planning (OP) land use file; (2) the recently completed and updated 1997 DNR eight digit watershed file; and (3) the 1992 Census of Agriculture by County for Maryland. Land classified in agricultural use from the OP land use file was used to determine the distribution of agricultural land within any given County by watershed in Maryland. Variables representative of the agriculture industry in the State from the Ag 1992 Census were extracted and distributed to watersheds on this basis. This assumes uniform geographic distribution of Ag Census variables such as farms, number of livestock and acres in crops.

Method for Deriving Agricultural Land Value (LNDVAL92):

After estimating agricultural variables on a watershed basis, it was then possible to derive a variable representing agricultural land value related to production, by watershed. This variable provides one measure of the economic risk of transfer of agricultural land to other uses. This risk of loss coefficient for agriculture is derived by taking the agricultural value per acre (computed from agriculture rental rate data and an implied discount rate) from the market value of agricultural land (published in the 1992 Census of Agriculture). Theoretically, a renter will pay a rental rate equal to returns from alternative investments for the rental dollar. A likely alternative in this case is assumed to be a bank savings rate for one year minus taxes on interest received or six percent. In other words, the renter will project his/her income from the rented land, and the rental rate he/she is willing to pay is the amount remaining after products are sold and after all other costs, including a return to management and labor, are deducted. The landlord will calculate, similarly, his/her perception of the agricultural value of the land and will accept an amount of rent perceived to represent a fair return on the agricultural value of the land. In many cases in Maryland, owners cannot expect to receive rent for agricultural purposes equal to a reasonable return on the market value of the land. As an example, if the renter of land thinks he/she can derive income of \$50 per acre from the use of land after all other annual costs have been deducted and could derive income of less than \$50 per acre from other kinds of equally safe investments, then he/she will be expected to invest the \$50 in land rent. The value of an investment expected to yield 6% returns \$833. Therefore, in the rental year, the agricultural value of the land is \$833, regardless of the market value of the land.

Spatially, in order to determine agricultural land at risk of development, average market value by county was multiplied times the acres within a county within a given watershed. The

market value determined was then summed for the watershed. Average values per acres were then recalculated by dividing total market value by the number of acres within that watershed. For average cash rental, if any portion of a watershed is located within the boundaries of a county, the average cash rental for that county is assigned to every watershed with land in the county. All county agricultural acreage will be assigned the same average rental rates. As an example:

	Number of Acres In Watershed	County Average Acres X Per Acre	Rent
County #1	100	\$45	\$4,500
County #2	400	\$40	\$16,000
County #3	500	\$41	\$20,500
County #4	200	\$45	\$10,000
Totals	1200	\$43	\$51,000

Accordingly, for this example, there is a watershed of 1200 acres and the average rental rate is \$43. Then, using the formula $V = a/r$ where V is value, a is average annual rent and r is a discount rate of 6%, it is possible to determine the value of the land in agricultural production. In each watershed, a differential between market value of land and the agricultural value is expected.

In other words, the land has value for uses in addition to the agricultural value. In those watersheds where the differential between market value of land in agriculture and agricultural value is greatest, the risk of losing agricultural land to other uses is the most severe.

Method for Deriving Yield per Acre per Watershed from Wheat (AGYLD97 and AGYLD92):

Two variables of agricultural productivity were determined for inclusion in this database. The maximum wheat yield estimate for the year 1992 and the potential yield for 1997 were computed using 24-25 years of historical county agricultural yield data for wheat. Wheat was chosen as an indicator crop as it has in the past and continues to be grown in all areas of Maryland. Actual 1992 yields of wheat on a per acre basis were derived for the state's watersheds. A regression analysis was run for the data series and a projection for 1997 wheat yield per acre was computed as well. The maximum potential was then derived by adding the standard error of the yield estimated to the projected yield. These two variables provide a measure of agricultural productivity for the years 1992 and 1997.